Planning for green infrastructure in Summerville, SC

Co sponsored by the South Carolina Forestry Commission and the USDA Forest Service

A Green Infrastructure Study
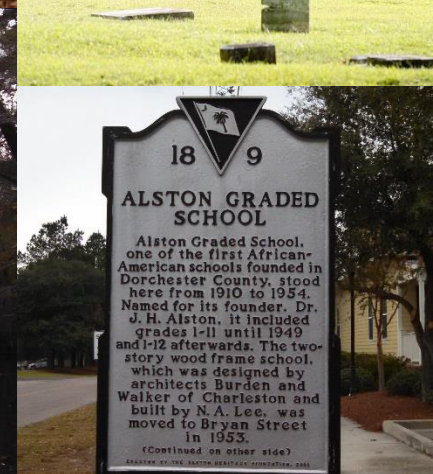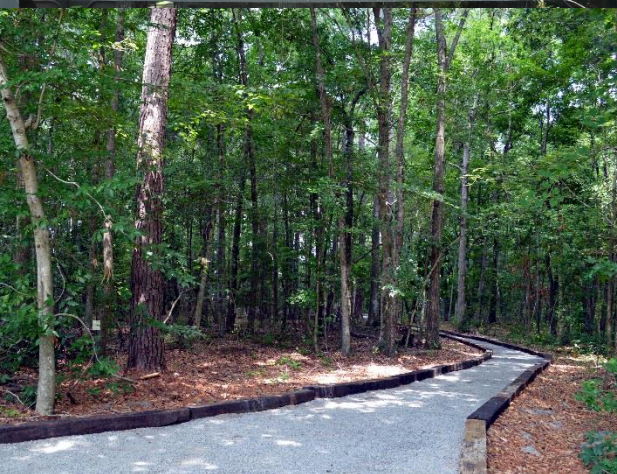# for Summerville, SC

Think of a Locality's Resources as *Natural Assets*

Includes all landscape elements that support our existence.

Natural Assets Also Support Cultural Assets

Natural assets support the landscape context for historic and recreation features.

Why do this work? When we don't we get

Traffic congestion

Poor water quality

Poor air quality

Loss of critical habitat

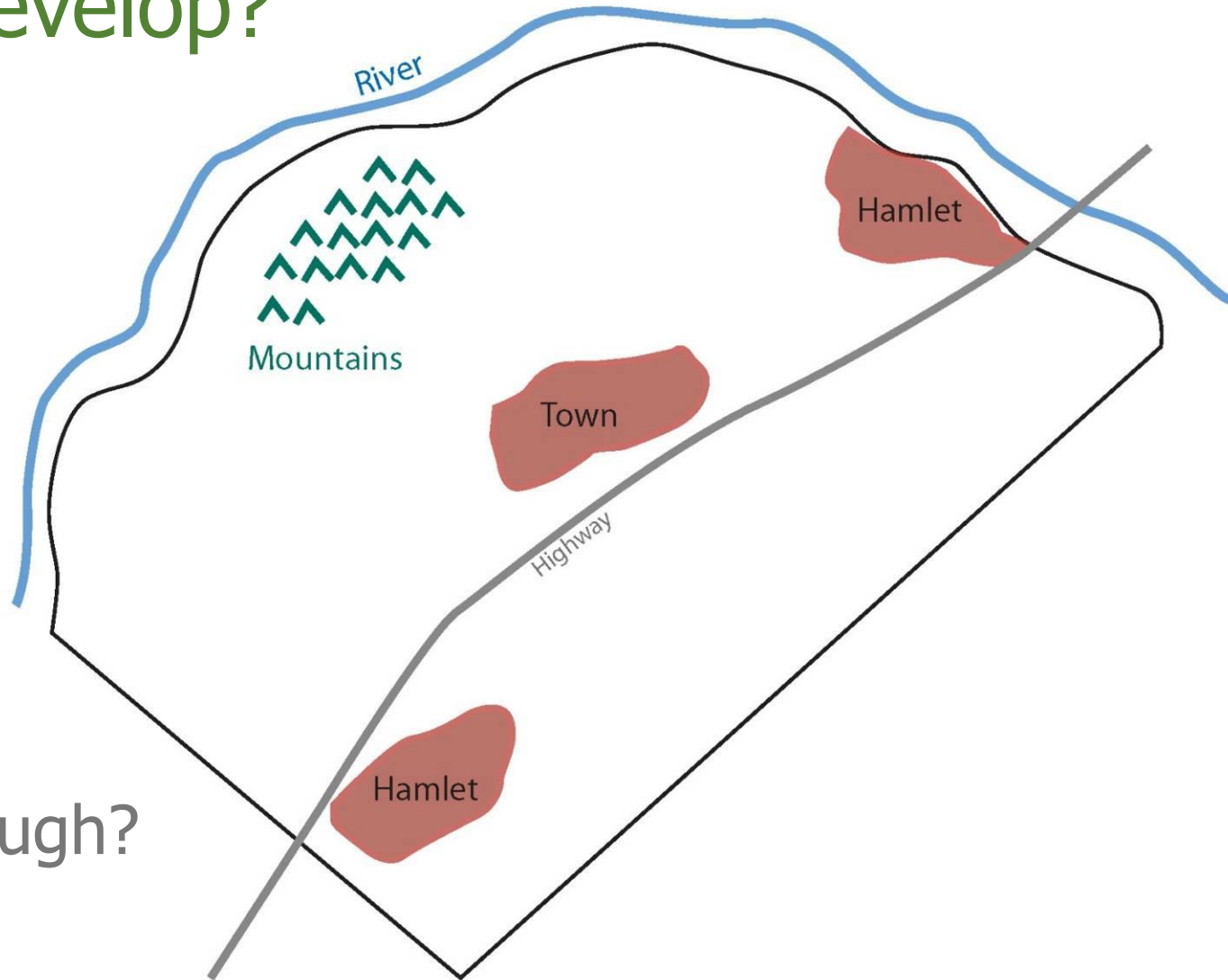Loss of working lands

While you viewed this slide, America lost another 3 acres of open space

Where to develop?

Smart
Growth =

Using
Existing (grey)
Infrastructure

But is this enough?

River

Hamlet

Mountains

Town

Highway

Hamlet

Typical Plan =

Save ½
Build ½

River

SAVE

Hamlet

Town

Highway

BUILD

Hamlet
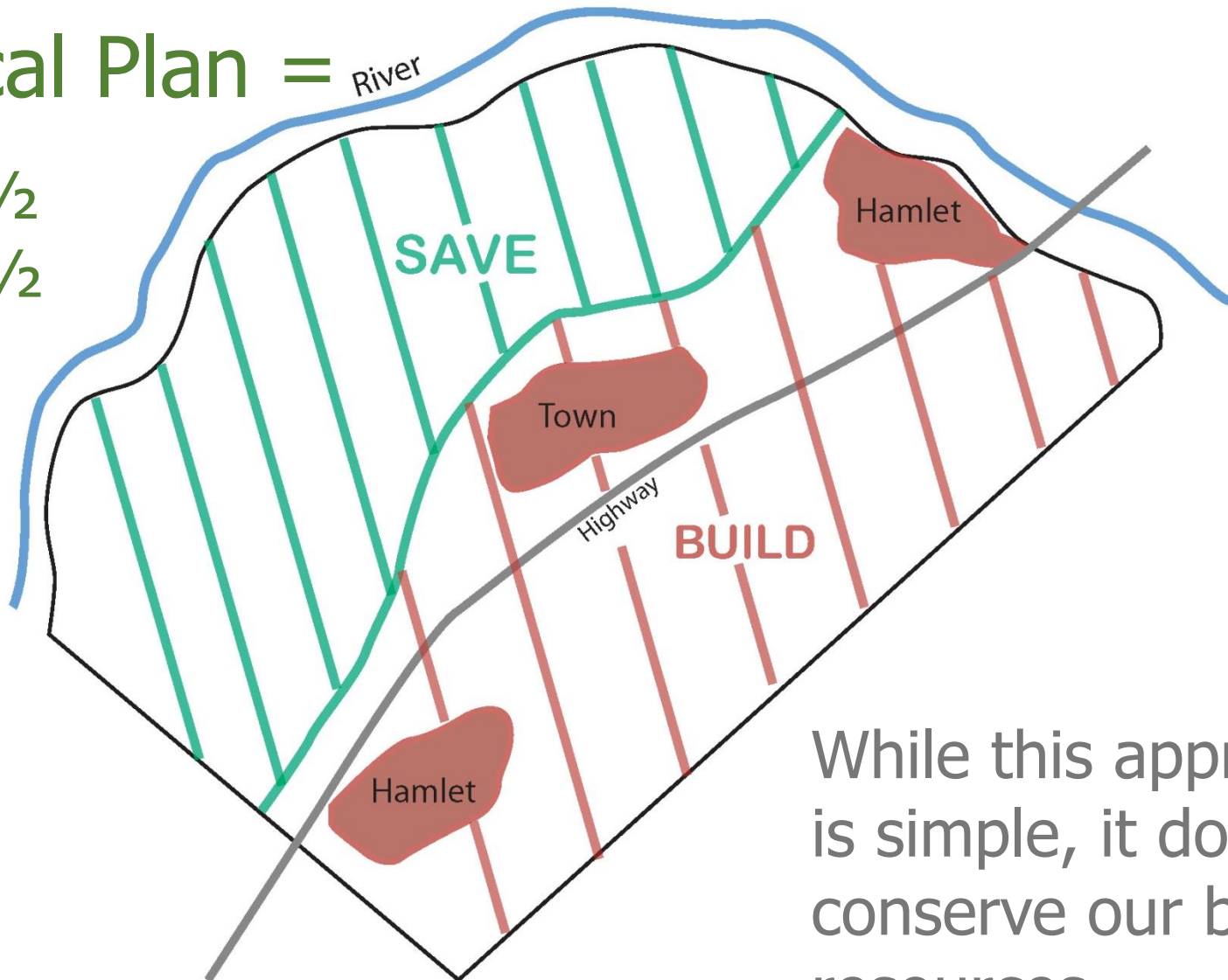
While this approach is simple, it does not conserve our best resources.

Need to consider:

What are <u>all</u> the assets?

Grey + Green =

Smart + Green

River

Forest

Hamlet

Mountains

Forest

Town

Wetlands

Wetlands

Highway

Forest

Farms

Wetlands

Hamlet

Traditional Development
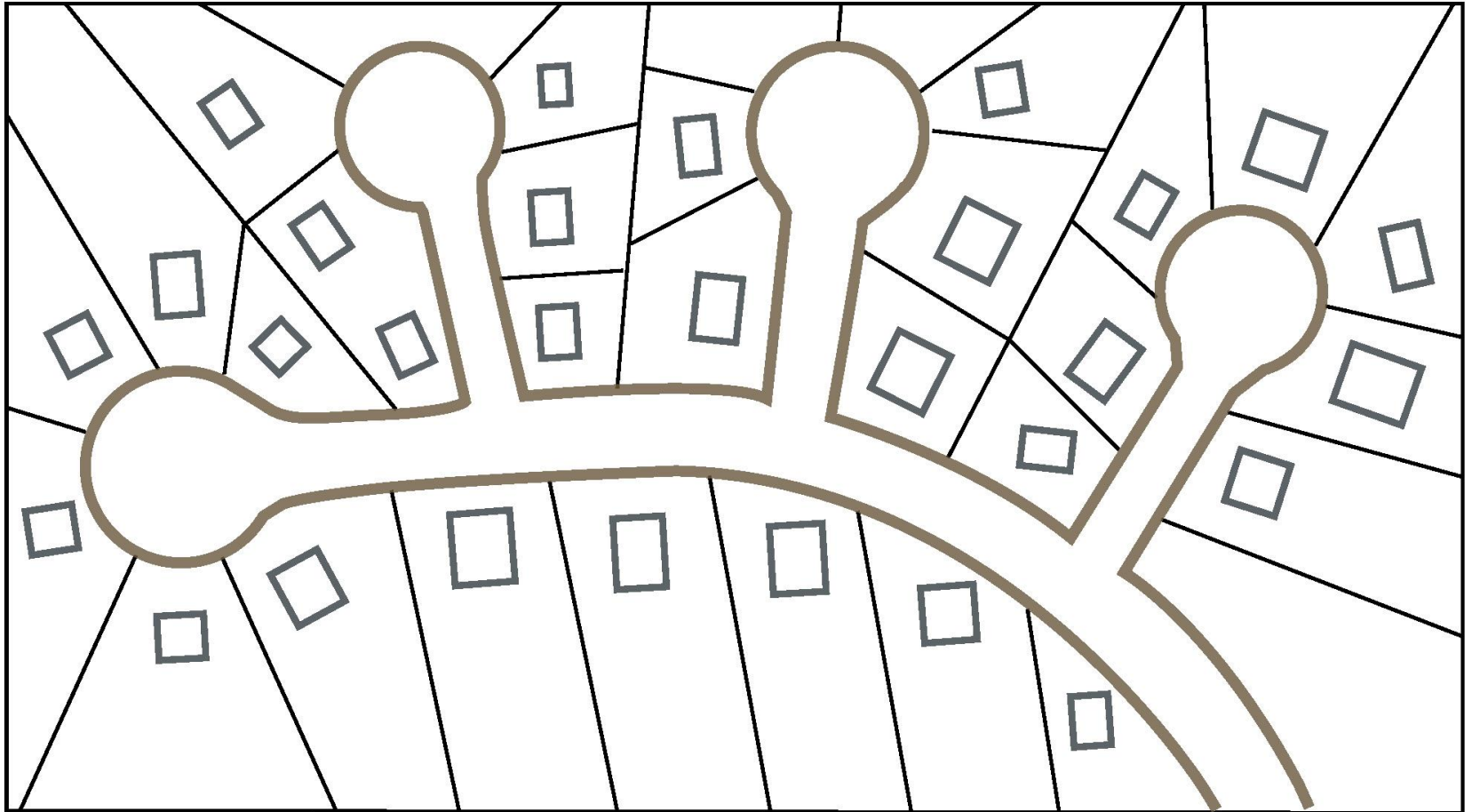
Clustering = setting buildings closer together to conserve green space

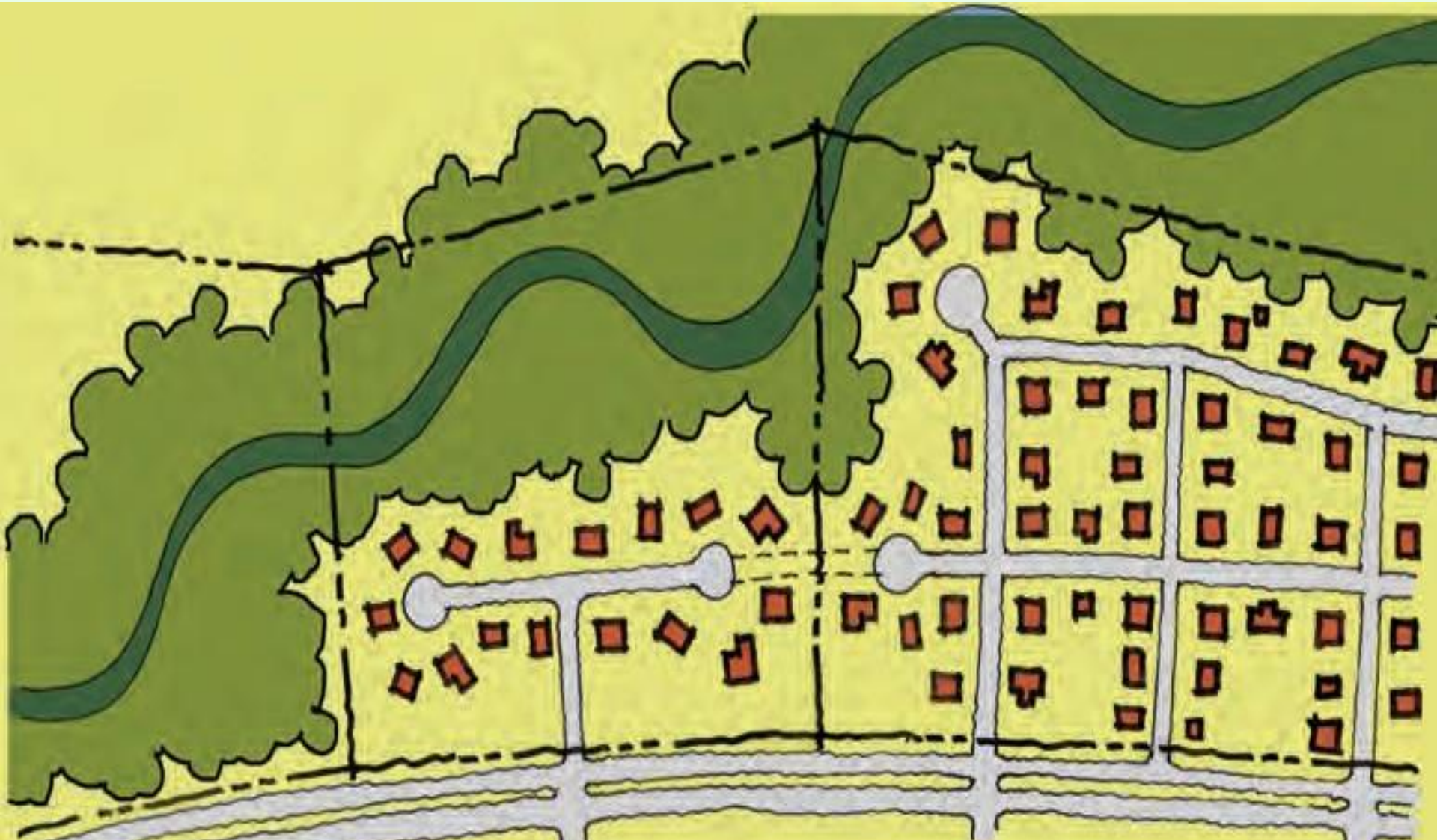Within a subdivision, clustering can add to open spaces and provide an amenity for wildlife and recreation. But which land is protected and how it is connected are critical.

The problem of clusters that don't look beyond parcel boundaries ...

| Traditional Development	Green Infrastructure Based-Development
Plan for grey infrastructure first (roads, stormwater pipes)	First, assess natural features and functions and protect them.
Green spaces in leftover lands (e.g. steep slopes and floodplains)	Plan for parks, trails, habitat connections before siting buildings.
Work within confines of parcel = pocket parks, inner trails, gated systems	Connect land and water habitats to region and across ownerships

What is Green Infrastructure?

A planimetric map of a Washington DC shows a neighborhood's gray infrastructure including buildings and roads (left). Classified high-resolution satellite imagery adds a green infrastructure data layer (trees and other vegetation) (right). Source: American Forests

Green infrastructure includes intact forests, tree canopy, wetlands, dune systems, parks and rivers, or agricultural soils that provide clean water, air quality, wildlife habitat and food. These natural assets create healthy communities and sustain the local economy.

How This Work Can Help Us!

✓ We can increase biodiversity and ecological resilience!

✓ We can make smarter investments in community water, trees, trails, food and parks!

✓ We can create a healthier community since the greener the community, the cleaner the air and water and the greater the options to exercise outdoors!

✓ We can prevent excessive stormwater runoff and flooding by increasing infiltration!

✓ We can make our community more attractive to businesses, families, and tourists!
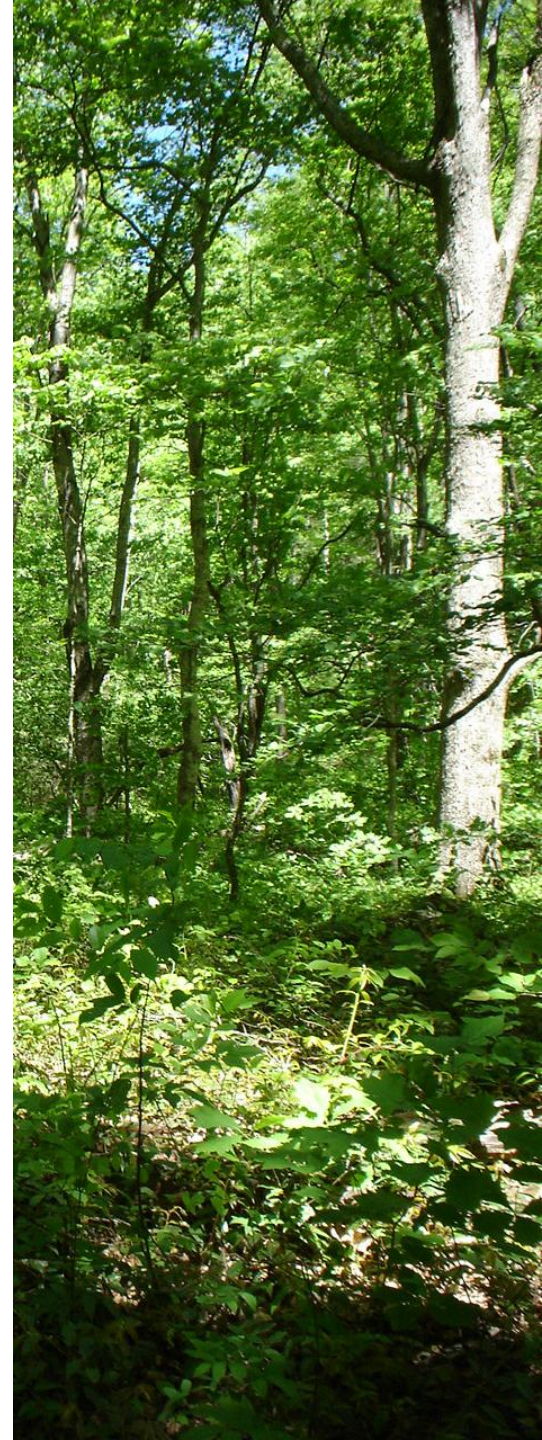
Trees – the original green infrastructure!

Trees give us cleaner air, shade, beauty and stormwater benefits at a cost that is far cheaper than engineered systems!

Remember too that the water a typical street tree can intercept in its crown, ranges from 760 gallons to 4000 gallons per tree per year, depending on species. That means less flooding!

How do we think about landscapes or sites? Think strategically about conservation and development ….

For new development:
1) Is this the right site to develop?
2) If yes, how do natural features connect to other sites?
3) How can I minimize my site impacts (smaller footprint…) AND keep connections?
4) Once I have the right site, have maximized its connections and protected sensitive landscape features, *then and only then* can I ask, how to mitigate the impacts (hint: use LID approaches with a decentralized, small footprint, integrated approach)!   Also, if previously impacted, consider restoring the natural features!

In summary, first ask, how can we avoid disturbing natural resources, then second, if we must disturb some area, how can we minimize impacts and lastly, how can we mitigate the harm caused.
So **first, *conservatio*n** and **then, *mitigation***.

City, Town, Site Scales ...

Trees and woodlots

Habitat patches

Streams and wetlands

Trails and smaller parks

Still can connect to larger networks ...

Sites ... what to do at the site scale

Urban Water

- Vegetated swales/bioswales
- Rain gardens/bioretention areas
- Vegetated filter strips
- Stormwater wetland

Community Spaces

- Pocket park
- Informal recreation
- Meadow/native habitat
- Outdoor classroom
- Community garden

Site Planning

- Green street design
- Reducing impervious sur-faces
- Vegetated landscaping
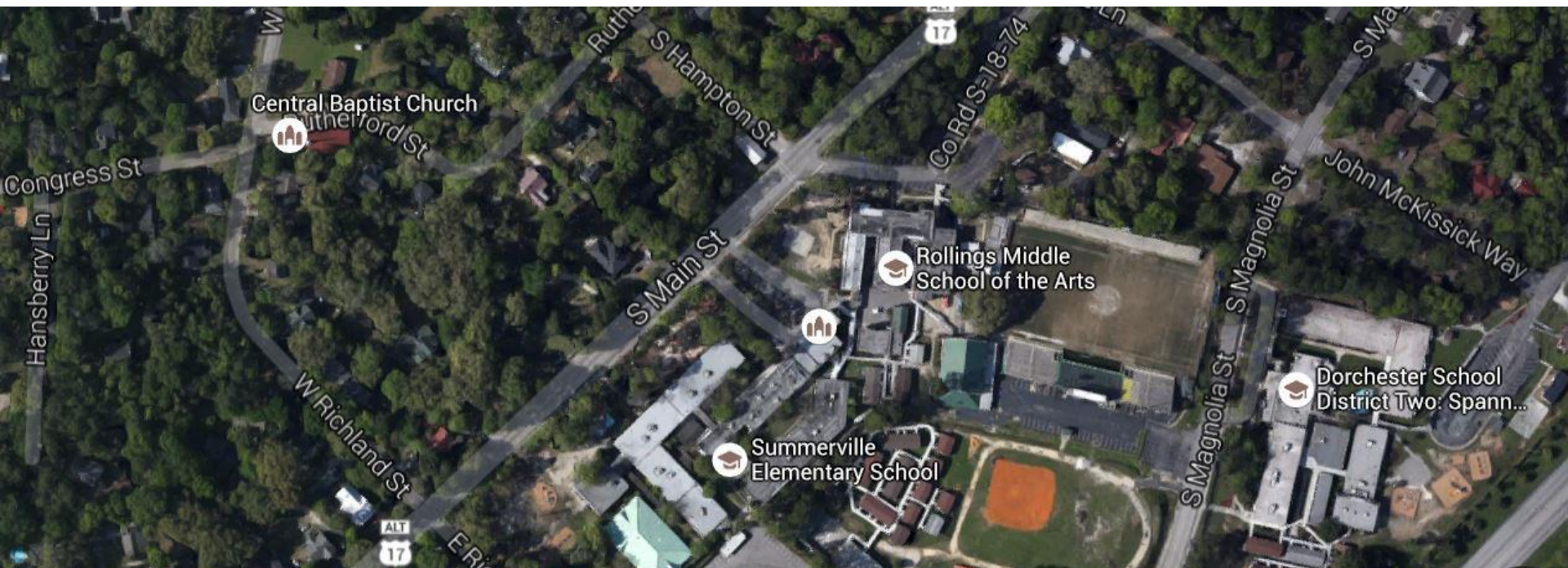- Urban forestry
- Urban stream restoration
- Riparian buffers

Community Stewardship

- Green space grant programs
- Land banking
- Mow-to-own
- Adopt-a-block

Summerville Will Use Tree Canopy Data to Calculate Green Infrastructure Assets and Strategies.

How much tree canopy do we have now? What are the benefits? Do we need more? Where should we plant new trees?

Tree Canopy Data

- Aerial photos and LiDAR used to identify tree canopy
  - Pixel-by-pixel basis
- 1 meter resolution (each pixel is 1 meter by 1 meter on the ground)
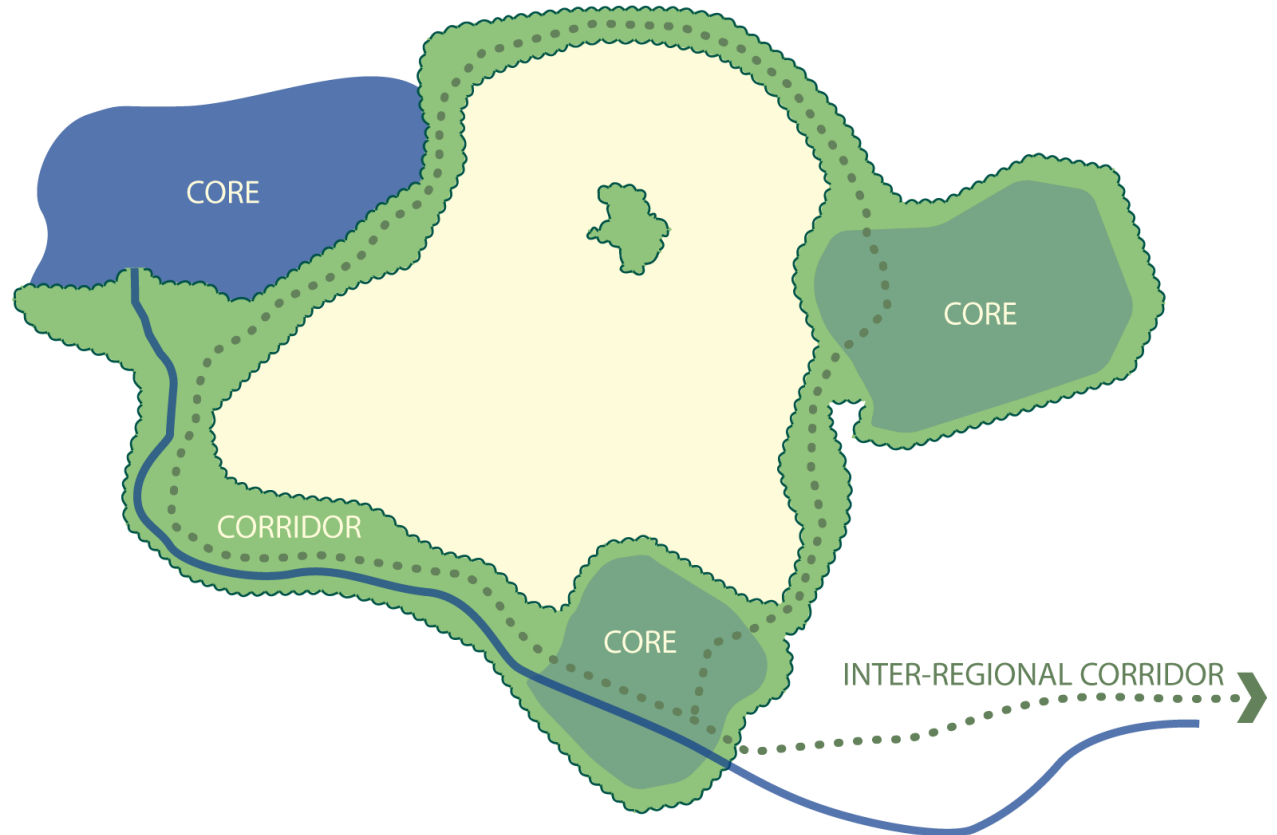- Based on latest imagery

Result: Detailed GIS (Geographic Information System) data – not just static maps – that Summerville can use for goal setting and planning!
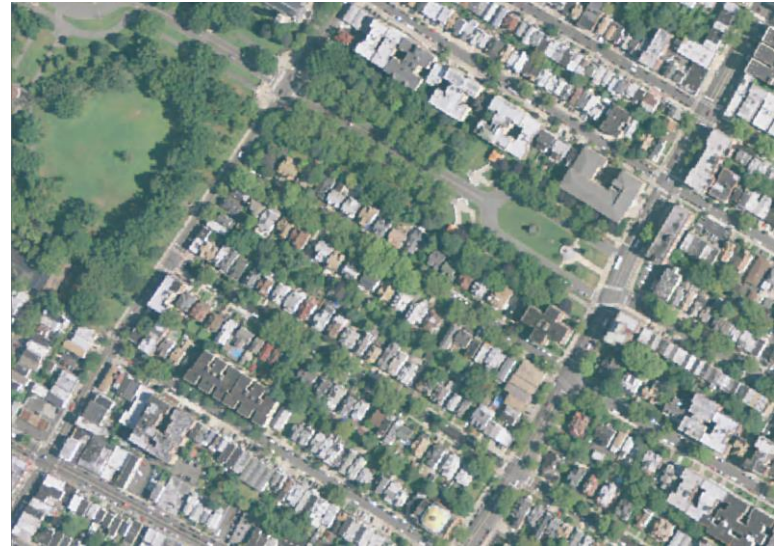
Green Infrastructure Planning For A Connected Landscape

It's about connecting the landscape!

Not just key habitats but how we connect them!

A Model of South Carolina's Intact Habitats

South Carolina Habitat Cores by Size

Habitat Cores

- Large (> 10,000 acres)
- Medium (1,000 - 9,999 acres)
- Small (100 - 999 acres)
- Habitat Fragment (10 - 99 acres)
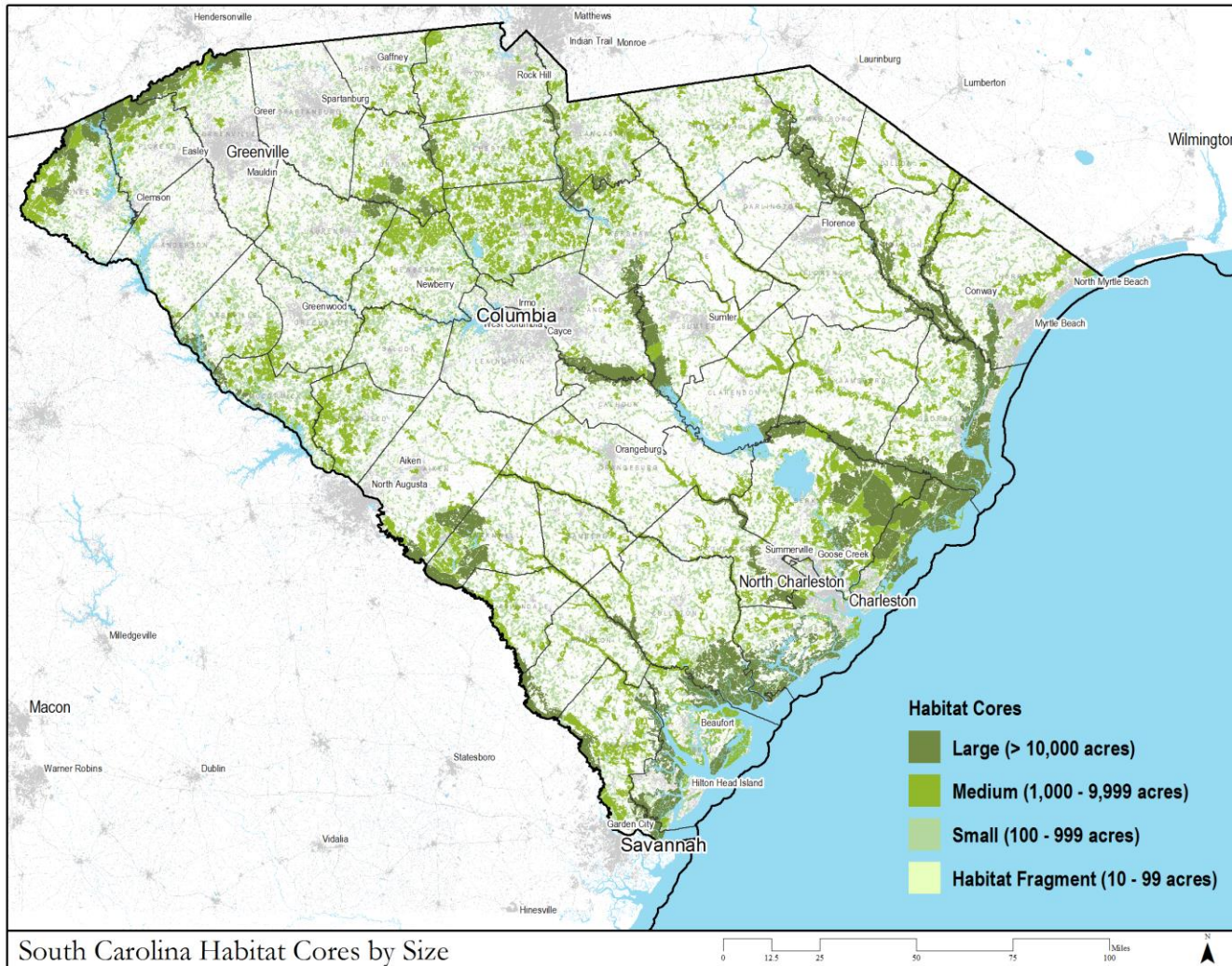
We can also see how Summerville fits into the statewide green network. The GIC built a model to show where the best habitats are found.

Six Steps for Green Infrastructure Planning


1) **Set Your Goals:** What do you value – clean water, wildlife?

2) **Review Data** – What do we know or need to know, to map identified values?

3) **Map Your Community's Ecological and Cultural Assets** – Based on the goals established in Step One and data from Step Two.

4) **Risk Assessment** – What assets are most at risk and what could be lost if no action is taken?

5) **Rank Your Assets and Determine Opportunities** – Based on those assets and risks you have identified, which ones should be restored or improved?

6) **Implement Opportunities** – Include natural asset maps in both daily and long-range planning (park planning, comp plans, zoning, tourism and economic development, seeking easements etc)

Green Infrastructure Planning Applications

- ✓ **Zoning Tools and Comp Plans**
- ✓ **Park and open space planning**
- ✓ **I.d. lands for PDR or TDR programs**
- ✓ **New ordinance development**
- ✓ **Species protection**
- ✓ **Heritage tourism and viewsheds**
- ✓ **Ag and Forestall Districts**
- ✓ **Easements**
- ✓ **Transportation plans: roads/trails**
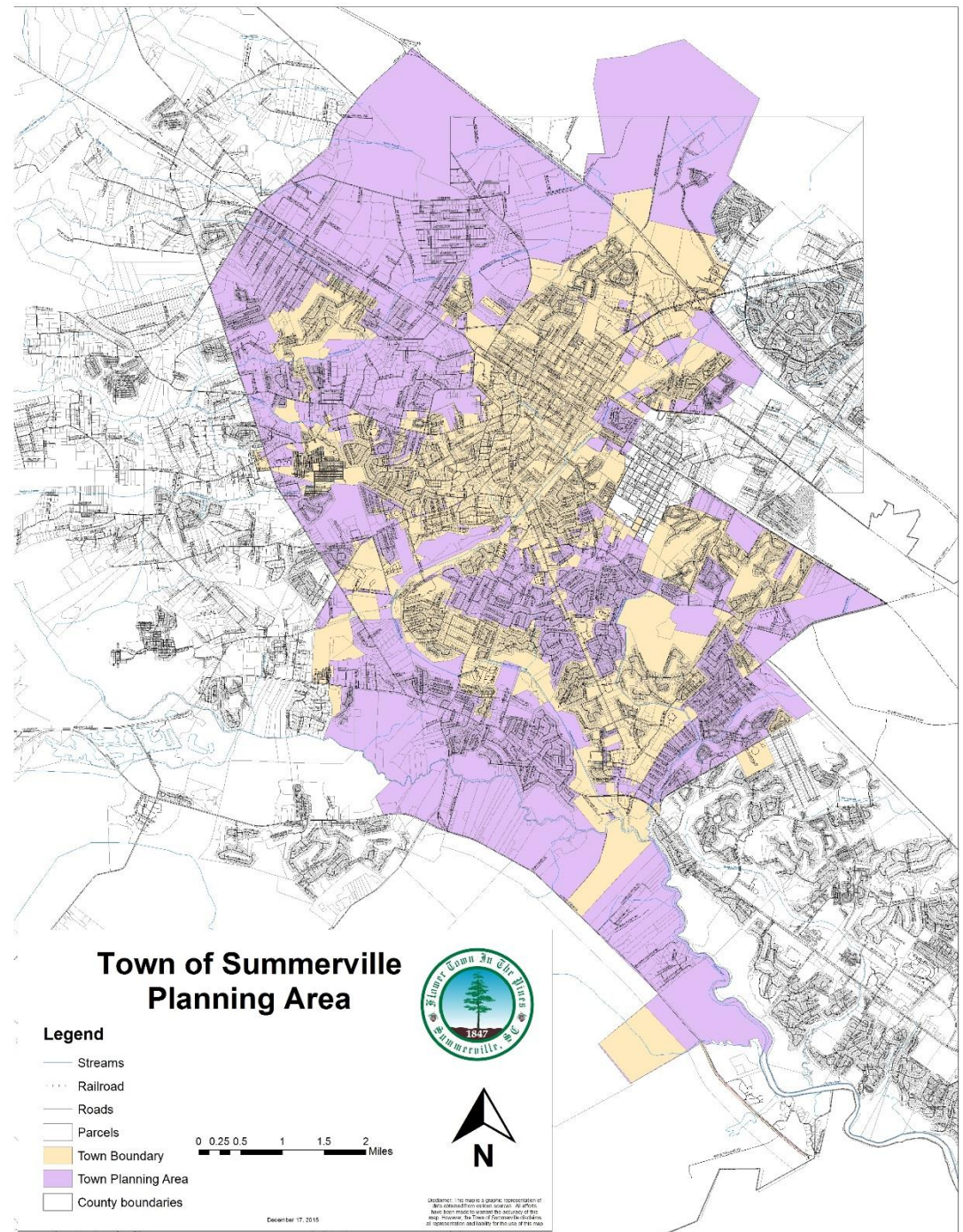- ✓ **Land management**
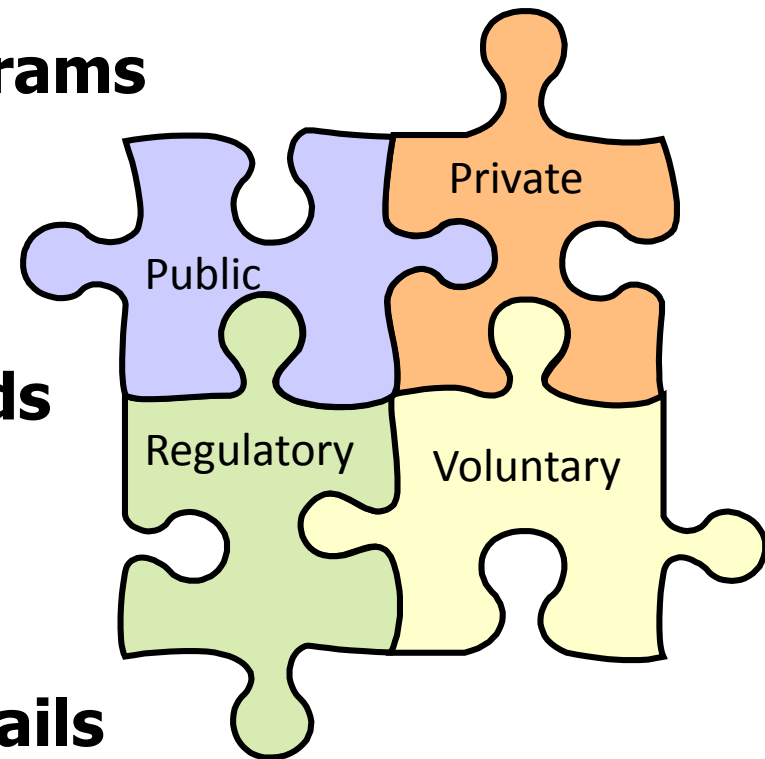
Project Organization

- The Planning Commission will serve as the Advisory Committee

- An additional ad hoc Technical Committee will provide technical expertise and advice to staff

- Green Infrastructure Center (GIC) is the consultant that has been contracted for GIS analysis and GI Planning support

Existing goals in The Town's Comprehensive Plan

- Future Land Use Focal Points: Responsible land development and growth patterns promoting sustainability of the natural and built environment will be encouraged within the Town of Summerville

- Match development with land suitability.

- Recognize the need to plan projects to reduce the impact within the watershed system.

- Recognize the importance of ensuring the quality of surface and groundwater systems.

- Preserve and protect scenic sites throughout the Summerville Planning Area to enhance the natural landscape.

- Preserve and protect the resources necessary to maintain and enhance the vitality of wildlife habitats.

- Preserve and protect important trees in the Summerville Planning Area.

- Promote the retention of existing and native vegetation and removal of invasive species.

- Encourage the preservation or recognition of the remaining farms and forest areas in Summerville

- Encourage all housing developments to consider the natural and cultural resources in the Summerville Planning Area and to develop in a fashion that does not diminish the importance of these resources.

- Protect natural and critical areas within the Summerville Planning Area from development pressures.

- Preserve and enhance existing historic buildings and sites within the Summerville Planning Area.

- Develop and coordinate parks and green spaces to preserve the historic and scenic atmosphere of the Summerville Planning Area.

- Protect, preserve, and expand the existing natural scenic resources and open space within the Summerville Planning Area.

Town Planning Area

Town of Summerville Planning Area

Legend
- Streams
- Railroad
- Roads
- Parcels
- Town Boundary
- Town Planning Area
- County boundaries

0 0.25 0.5 1 1.5 2 Miles

N

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Slides by the
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